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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,498	07/18/2003	Kazuhiko Tanaka	2635-166	2609
23117	7590	07/27/2004	EXAMINER	
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714			EDWARDS, LAURA ESTELLE	
			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/621,498	Applicant(s) TANAKA, KAZUHIKO	
	Examiner Laura E. Edwards	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.  
     4a) Of the above claim(s) 12 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>071803</u> . | 6) <input type="checkbox"/> Other: ____.  |

*Election/Restrictions*

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-11, drawn to a printing apparatus, classified in class 118, subclass 46.
- II. Claims 12 and 13, drawn to a printing method, classified in class 101, subclass 483.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used for another and materially different process such as providing a conductive pattern on a continuous sheet or web.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Larry Nixon on 7/19/04 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12 and 13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Drawings***

Figure 25 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

Claims 3 and 6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, it is unclear how the marking and transfer rollers contacting at constant speed and pressure constitute a structural limitation. This claim as written appears to be process limiting because the claim does not require any structure that would allow for maintenance or control of the pressure or speed of the two rollers.

In claim 6, it is unclear as to the meaning of the phrase that the doctor blade is softer than the marking roller. Does the marking roller have a degree of hardness greater than that of the blade?

In claim 7, it is unclear as to the meaning of the phrase, "said printing pressure expressed by a compression of said transfer roller is greater than or equal to 0.3 mm and smaller than or

equal to 0.8 mm". It is unclear whether the apparatus is constructed and arranged to exert a pressure in a pressure range or whether the apparatus is constructed and arranged such that compression of the transfer roller extends no more than the distance claimed. Clarification is necessary.

In claim 8, it is unclear how the temperature of the ink constitutes a structural limitation. Maintenance of the ink at a desired temperature range appears to be a process limitation in consideration of the fact that a temperature regulator for the ink supply is not claimed.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US 6,111,345) in view of Bolte et al (US 5,671,678).

Shibata et al teach a printing apparatus for printing a pattern on a surface of a spark plug insulator comprising a marking roller (2202) for forming a conductive ink film on an intaglio thereon; a transfer roller (2300) for transferring said ink film which is further transferred to said spark plug insulator in order to print said pattern; an ink supply nozzle (2100) for supplying an ink via for said ink film; and a doctor blade (2101 or 2500) for scratching from said marking roller said ink which does not contribute to form said ink film (see Fig. 28). Shibata et al recognize the use of a minute amount of conductive material for the spark plug (see col. 20, lines 25-30 and 35-36) but are silent concerning the pattern roller having a concave cell depth greater than or equal to 15 $\mu$ m and smaller than or equal to 20  $\mu$ m. However, it was known in the art, at the time the invention was made, to provide in a patterned printing roller having a cell depth of 15 $\mu$ m as evidenced by Bolte et al (see col. 1, lines 40-43). In recognition of the fact that Shibata et al seek to maintain a conductive film thickness on the spark plug in the ideal thickness range of 10 to 60  $\mu$ m, it would have been obvious to one of ordinary skill in the art to provide a cell depth of 15  $\mu$ m as taught by Bolte et al in the Shibata et al pattern or marking roller in order to maintain quality printing by using a minimal amount of conductive ink which lowers manufacturing costs.

With respect to claim 2, see Shibata et al, col. 20, lines 58-66.

With respect to claim 3, this claim is deemed a process limitation and not a structural limitation to be given patentable weight. However, even upon consideration of the use of constant speed and pressure, it is within the purview of one skilled in the art to maintain constant speed and pressure to ensure uniform printing.

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With respect to claims 4 and 5, Shibata et al teach setting upper blade (2101) and lower blade (2500) relative to the marking roller (2202) (see col. 21, lines 9-12) such that one of ordinary skill in the art would expect that the upper and lower blades move relative to the marking roller.

With respect to claim 6, even though Shibata et al are silent concerning the doctor blade being made of a material having less hardness than the metal marking roller, Bolte et al recognize the use of an elastomeric based doctor with respect to a metal pattern roller to meter and/or remove excess coating material from the pattern roller (see col. 4, lines 52-55 and lines 61-65). In view of the teachings of Bolte et al, it would have been obvious to one of ordinary skill in the art to use an elastomeric based doctor member softer than the metal marking roller in the apparatus defined by the combination above in order to meter and remove excess coating material at a low manufacturing cost.

Claims 7 and 8 have been given no patentable weight as these claims recite process limitations.

With respect to claim 11, Shibata et al are silent concerning the roller surface including titanium nitride. However, it was known in the art at the time the invention was made, to provide a pattern roller with a titanium nitride coating thereon in order to maintain a corrosion resistant, abrasion resistant, long life pattern or marking roller as evidenced by Bolte et al (see col. 5, lines 24-27). It would have been obvious to one of ordinary skill in the art to provide a titanium nitride coating as taught by Bolte et al on the surface of the marking roller of the apparatus defined by the combination above in order to extend the lifetime of the marking roller.

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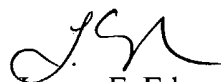
*Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents disclose the state of the art with respect to spark plug printing apparatus: Duce (US 4,885,992), Cosson et al (US 4,640,188), and Perry et al (US 5,373,783).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Edwards whose telephone number is (571) 272-1227. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Laura E. Edwards  
Primary Examiner  
Art Unit 1734

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July 22, 2004